

# Southerly range extension of the poorly known, Queensland endemic yellow-naped snake *Furina barnardi* (Squamata: Elapidae) into the Mulga Lands

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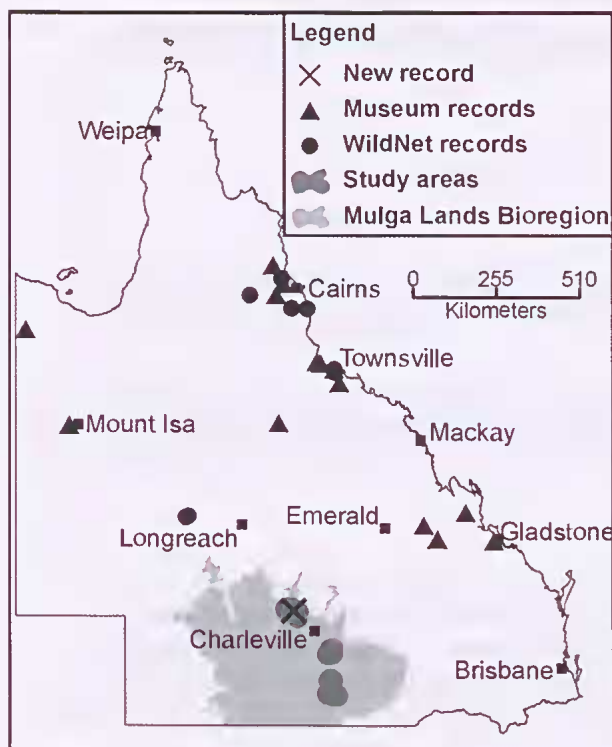
## ABSTRACT

The range of *Furina barnardi* is extended more than 200 km south to Mount Morris Station (25.84°S, 145.63° E) near Charleville, southwestern Queensland. Despite recent concentrated survey effort in the region, this is the first record for this rarely encountered species in the Mulga Lands biogeographic region. The specimen was collected from mulga (*Acacia aneura*) woodland which generally matches other dry woodland areas where the species has previously been recorded. Comment is made on the incorrect usage of the divided nasal scale, an apparent key feature used in many current field guides to separate *F. barnardi* from its congeners. □ *Furina barnardi*, range extension, Mulga Lands.

The genus *Furina* consists of five nocturnal Australian species all of which favour drier forests and woodlands (Wilson 2005). Two of these species (*F. barnardi* and *F. dunmalli*) are infrequently recorded and relatively little of their ecology is known (Shine 1981; Wilson 2005; Greer 2006). While *F. dunmalli* appears to be confined to the Brigalow Belt biogeographic region of Queensland and adjacent northern New South Wales (Wilson 2005; Swan *et al.* 2004), *F. barnardi*, a species endemic to Queensland, has been recorded in the State's Brigalow Belt, Einasleigh Uplands, Wet Tropics, Desert Uplands and Northwest Highlands biogeographic regions (Queensland Museum records; Wilson 2005). Despite this broad distribution, the species is currently listed as 'near threatened' under the *Queensland Nature Conservation Act 1992*,

an interim measure until the status can be reviewed by the Species Technical Committee (DERM 2010). The species was previously listed as rare due to insufficient knowledge on population size and threatening processes with sparsely scattered records across a large area (Cogger *et al.* 1993). Currently only 23 specimens are held by Australian museums (21 in the Queensland Museum), including a clutch of 10, bred from a pair collected near Gladstone in mid-eastern Queensland (Fig. 1). There are a further three specimens held by the California Academy of Sciences (CAS), including the holotype (CAS77798).

In October 2007, a large (approximately 40 cm) specimen of *F. barnardi* was found during a nocturnal search at Mount Morris Station



(25.84°S, 145.63°E), approximately 80 km WNW of Charleville, southwestern Queensland. This animal has been lodged at the Queensland Museum (QMJ86740). Table 1 outlines the morphological information for the vouchered animal, collected at one of 83 sites established on grazing properties in the eastern Mulga Lands biogeographic region (Fig. 1). Sites were established to examine faunal responses across broad vegetation condition states in remnant and non-remnant mulga *Acacia aneura* ecosystems (Eyre *et al.* 2008). At each site, systematic fauna surveys were conducted over two six-day survey periods between 2007 and 2008, one during 'spring/summer' (September to December) and again during 'summer/autumn' (February to May). These surveys included pitfall trapping, funnel trapping and active, diurnal and

FIG. 1. Distribution of *Furina barnardi* records in relation to the new specimen (cross) collected from the Mulga Lands biogeographic region, Queensland. Museum records (triangles) from the Queensland Museum, California Academy of Sciences and the Australian Museum. WildNet records (circles) are sighting records held by the Department of Environment and Resource Management wildlife database.

TABLE 1. Comparative morphological data for the Mount Morris Station voucher specimen (QMJ86740), the holotype (CAS77798), other *Furina barnardi* records, and other *Furina* species: observed numbers of mid-body, subcaudal, ventral, upper labial, lower labial and temporal scales; whether the nasal scale is divided (div) or undivided (undiv); and whether the mid-body pattern consists of pale-edged scales or dark-edged scales forming a reticulated pattern. Morphological data from Cogger (2000), Ferguson & Mathieson (unpublished data), Kinghorn (1939), and Scanlon (2003). \**Furina barnardi* usually has six upper labials, sometimes seven when the temporolabial (lower anterior temporal) reaches the lip, also changing the temporal scale count in the first row, as exhibited by the holotype.

Species	Midbody	Subcaudal	Ventral	Upper Labial	Lower Labial	Nasal	Temporal	Mid-body scale pattern
QMJ86740	15	38	196	6*	7	undiv	2+2+3*	Pale-edged
Holotype - CAS77798	15	40	183	7*	7	undiv	1+2+3*	Pale-edged
<i>F. barnardi</i>	15	35-58	157-221	6*	7	undiv	2+2+3*	Pale-edged
<i>F. diadema</i>	15	35-54	156-203	6	7	undiv	2+2+3	Dark-edged
<i>F. dunmalli</i>	21	37-46	166-189	6	7	div	2+2+3	Absent
<i>F. ornata</i>	15 or 17	37-63	164-217	6	7	undiv	2+2+3	Dark-edged
<i>F. tristis</i>	17	44-51	171-181	6	7	div	2+2+3	Pale-edged

nocturnal searching for reptiles. Considerable effort was invested in these reptile surveys with more than 2700 pit trap nights, nearly 4000 funnel trap nights and over 280 hours spent actively searching, resulting in only a single record of *F. barnardi* in the Mulga Lands bioregion.

Faecal material collected from QMJ86740 contained a large quantity of unidentified reptile scales, concurring with previous reports of the species feeding on skinks (Kinghorn 1939; Shine 1981). The vegetation at the collection site was open mulga *Acacia aneura* and poplar box *Eucalyptus populnea* woodland that had been pulled for stock fodder during the previous three to four months and was within 100 m of an intact remnant block of the same vegetation type, defined as Regional Ecosystem 6.5.18 (Queensland Herbarium 2009). The habitat does not differ greatly from the other dry woodlands in which the species is known to occur (Wilson 2005; Emmott & Wilson 2009). The ground layer was dominated by hard, bare earth (reddish brown light clay) with shrubs (Charleville turkey bush *Eremophila gilesii*, emu bush *E. glabra* and *Sida cunninghamii*) and grasses (Jericho wiregrass *Aristida jerichoensis*, woodland love grass *Eragrostis sororia* and dainty love grass *E. microcarpa*) sparsely distributed. Due to the recent fodder harvesting of mulga, there was a high volume of fallen timber (22 m<sup>3</sup>/ha versus 7.5 m<sup>3</sup>/ha pre-harvesting) and an abundance of exposed mulga root balls, leaving large (>1 m deep) holes.

This is the first record for the species in the Mulga Lands biogeographic region and lies (1) approximately 410 km SE of the nearest published sight record for the species near Opalton in SW Queensland (Wilson & Knowles 1988; Wilson 2005); (2) approximately 450 km WSW of the nearest Queensland Museum specimen collected from Taunton National Park and (3) approximately 200 km south of the speculated range detailed in Wilson (2005).

It should be noted that *F. barnardi* as a species is ill-defined with specimens being comparable to

*F. ornata* (Ehmann 1992; P. Couper pers. comm.). The two species have been distinguished in the past by *F. barnardi* having a divided nasal scale (Wilson & Knowles 1988; Cogger 2000) or at least a large nostril taking up the entire nasal scale (Wilson 2005) whereas *F. ornata* has an entire undivided nasal scale. This differs from the original description by Kinghorn (1939), which states the nasal shield is single and 'slightly grooved, especially on its lower half, and sharply pointed posteriorly' (Kinghorn 1939).

However, Scanlon (2003) highlights that, although widely cited in the identification of *F. barnardi*, the diagnostic characteristic of a divided nasal is incorrect as *F. barnardi* has a single undivided nasal scale. This was confirmed by examination of images of the CAS specimens, including the holotype, and the specimens held in the Queensland Museum by the authors (DF, MM), which revealed each specimen had undivided nasal scales. In addition to the holotype, three specimens (J33570, J54477 and J67850) showed a slight groove or crease on the lower half, below the nostril. This crease was not present on both nasal scales of any of these specimens, and may be a consequence of preservation.

The Charleville specimen was identified as *F. barnardi* by comparison with morphological details of the holotype and the specimens held by the Queensland Museum (Table 1). Fifteen midbody scales and an undivided nasal scale separate it from *F. dumalli* (21) and *F. tristis* (17). *Furina barnardi* can be distinguished from *F. ornata* and *F. diadema* by a pale yellow to brown nape, with a dark grey-brown head (Emmott & Wilson 2009; Wilson 2005; Cogger 2000), and a sometimes indistinct, pale edge to the midbody scales (P. Tremul pers. comm.; pers. obs.). *Furina ornata* and *F. diadema* both have a glossy dark brown to black head and neck with a red to orange nape (Emmott & Wilson 2009; Wilson 2005; Cogger 2000). The red to orange nape colouration is known to fade in larger older *F. ornata* specimens (Ehmann 1992), however the

mid-body scale pattern of both *F. ornata* and *F. diadema* contrasts strongly to that of *F. barnardi* in having dark edges forming a distinct reticulated pattern. The voucher specimen from Mount Morris Station has an almost indistinguishable pale band on the nape and, more importantly, pale edged mid-body scales, like those of the holotype and other *F. barnardi* specimens.

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